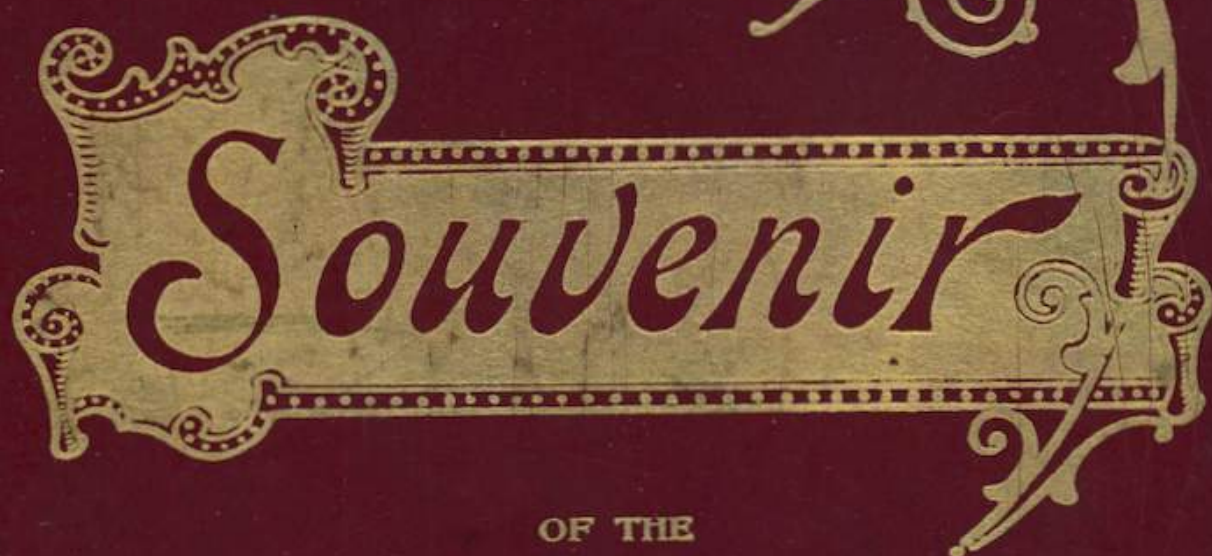


THE
COOLGARDIE
WATER
SUPPLY

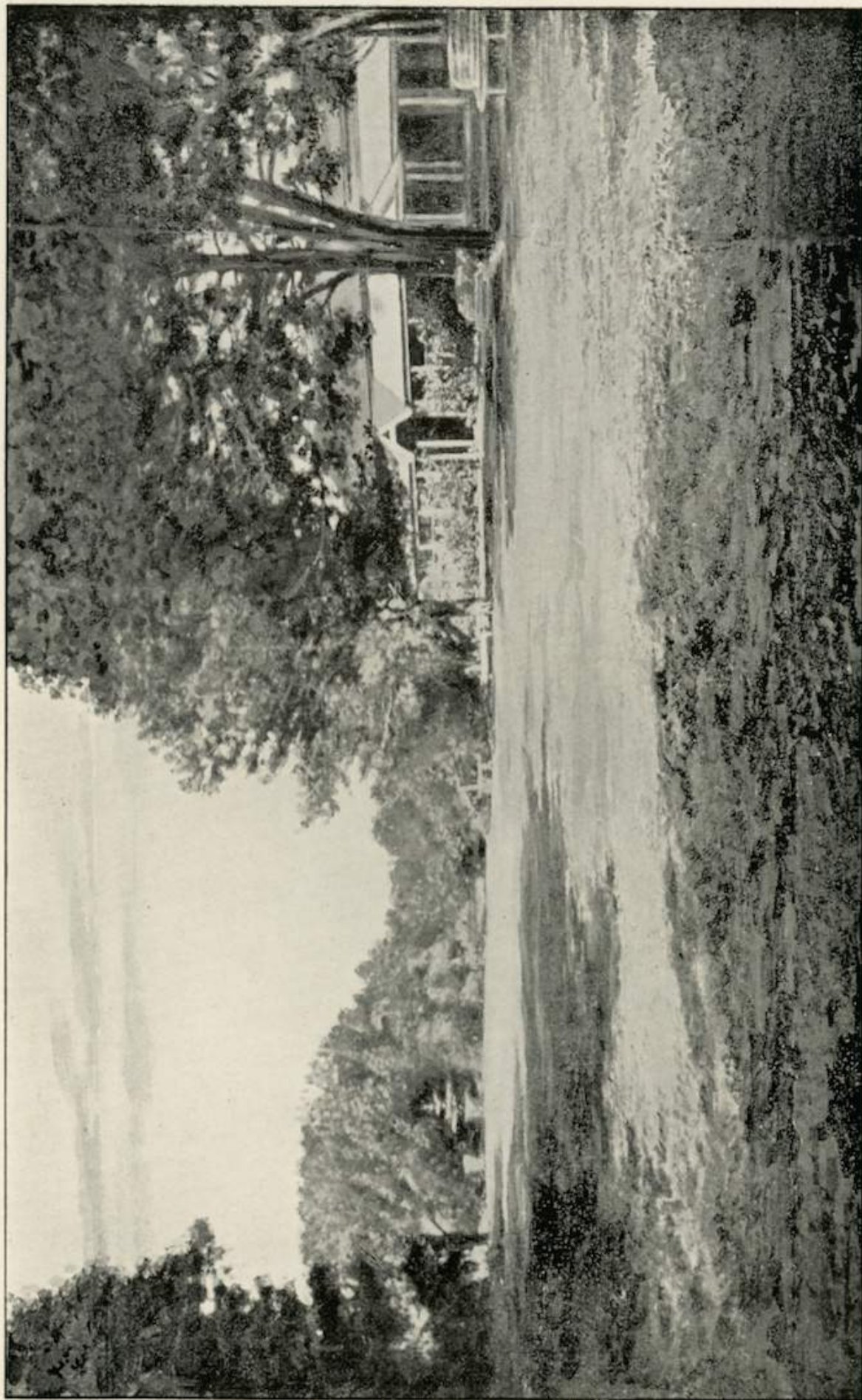


OF THE
Opening of the Works

BY
SIR JOHN & LADY FORREST

AT MUNDARING
COOLGARDIE and
KALGOORLIE
WESTERN AUSTRALIA.

22nd & 24th JANUARY
1903.



"THE BUNGALOW," PERTH, WESTERN AUSTRALIA.
The Home of SIR JOHN and LADY FORREST.

1906
Forrest

THE
COOLGARDIE
WATER
SUPPLY



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John Forrest.



Margaret-Elvira Forrest

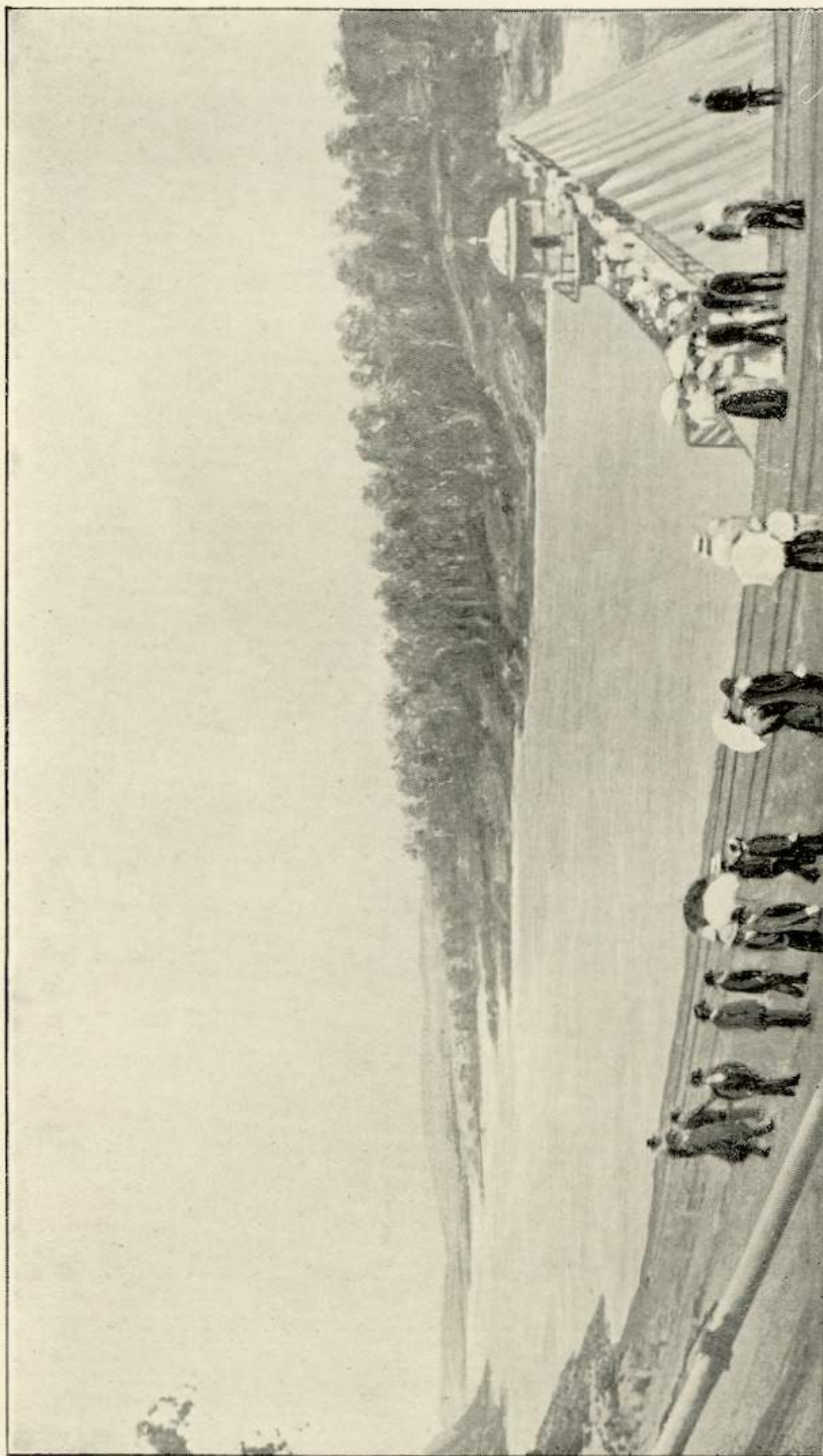
SIR JOHN and LADY FORREST.

THE following brief description of the
project for supplying Water to the
Coolgardie Goldfields, and of the Open-
ing Ceremony at Kalgoorlie, Western Aus-
tralia, on the 24th January, 1903, is
presented by

Sir John and Lady Forrest

To *W. A. Green*.

as a **Souvenir** of the successful completion
of a Great and Beneficent Work.



MUNDARING WEIR, HELENA RIVER. (21 miles from Perth).

Showing the Impounded Water—The Source of the Water Supply.

Speech

BY

The Right Honourable Sir John Forrest,

P.C., G.C.M.G., LL.D.

*At the Opening Ceremony of the
Coolgardie Water Supply Works,
at Kalgoorlie, 24th January, 1903.*

“LADIES AND GENTLEMEN,

“It is to me a great honour to be
“present here to-day to declare this **Great**
“**Water Scheme** open, and it is a source
“of much gratification that I should have
“been privileged, not only to introduce
“the necessary legislation for undertaking
“this great work, but also to declare it to
“be available for the use of the people.

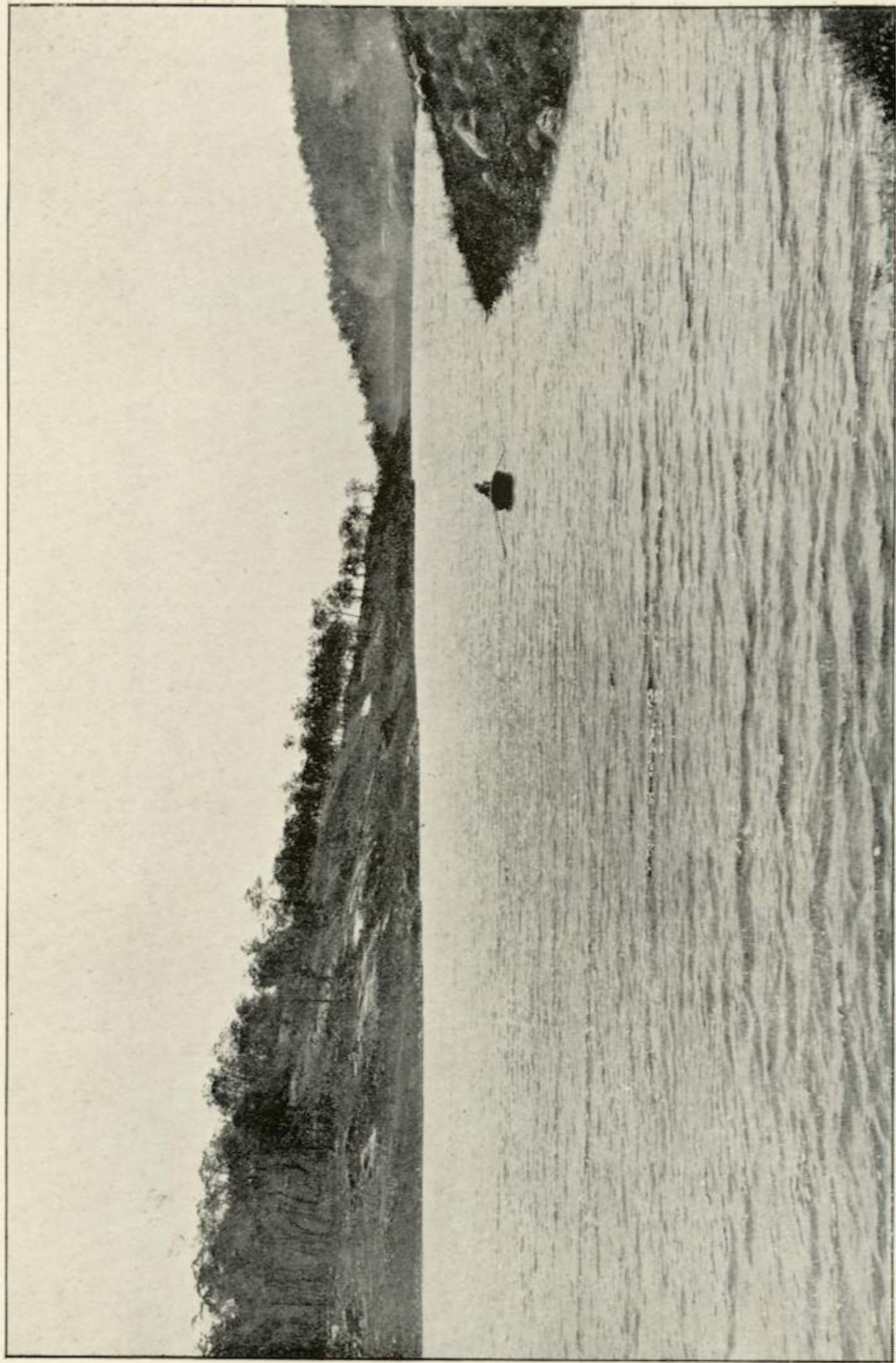
“ **On the 23rd March, 1896**, at the
“Opening of the Railway to Coolgardie,
“I publicly announced (being then your
“Prime Minister) that—

6 **Coolgardie Water Supply.**

‘The Government was determined that
‘these Goldfields should be provided
‘with an adequate water supply, and
‘that the scheme which would do this
‘was that which would bring the
‘water from the Coast;’

“and **on the 21st July** following I moved,
“in the Legislative Assembly, the second
“reading of a Bill ‘to authorise the raising
“of a sum of **£2,500,000** by Loan, for the
“purpose of providing a permanent water
“supply for the Coolgardie Goldfields.’
“The Bill was passed by Parliament on
“the **3rd September**, and was assented to
“on the **23rd September, 1896.**

“The promise then made to give the
“people on the Coolgardie Goldfields
“**‘a river of pure water,’** is to-day fulfilled.
“The intervening period has been one of
“great anxiety. Delays have occurred;
“difficulties have had to be surmounted;
“the most virulent hostility and misrepre-
“sentations have had to be continually
“watched and defeated; but to-day, I, and
“all those who supported me, are able to



MUNDARING RESERVOIR, HELENA RIVER. (21 miles from Perth).

(The Source of the Water Supply—Capacity 5,000 million gallons).

Coolgardie Water Supply. 7

“rejoice that not only have we kept our
“word, not only has our great faith in
“the future of these **Goldfields** been re-
“warded by the complete success of our
“enterprise, but, even more important still,
“we have completed a great necessary
“humanitarian work, destined to amelio-
“rate the conditions of life on these Gold-
“fields for the future.

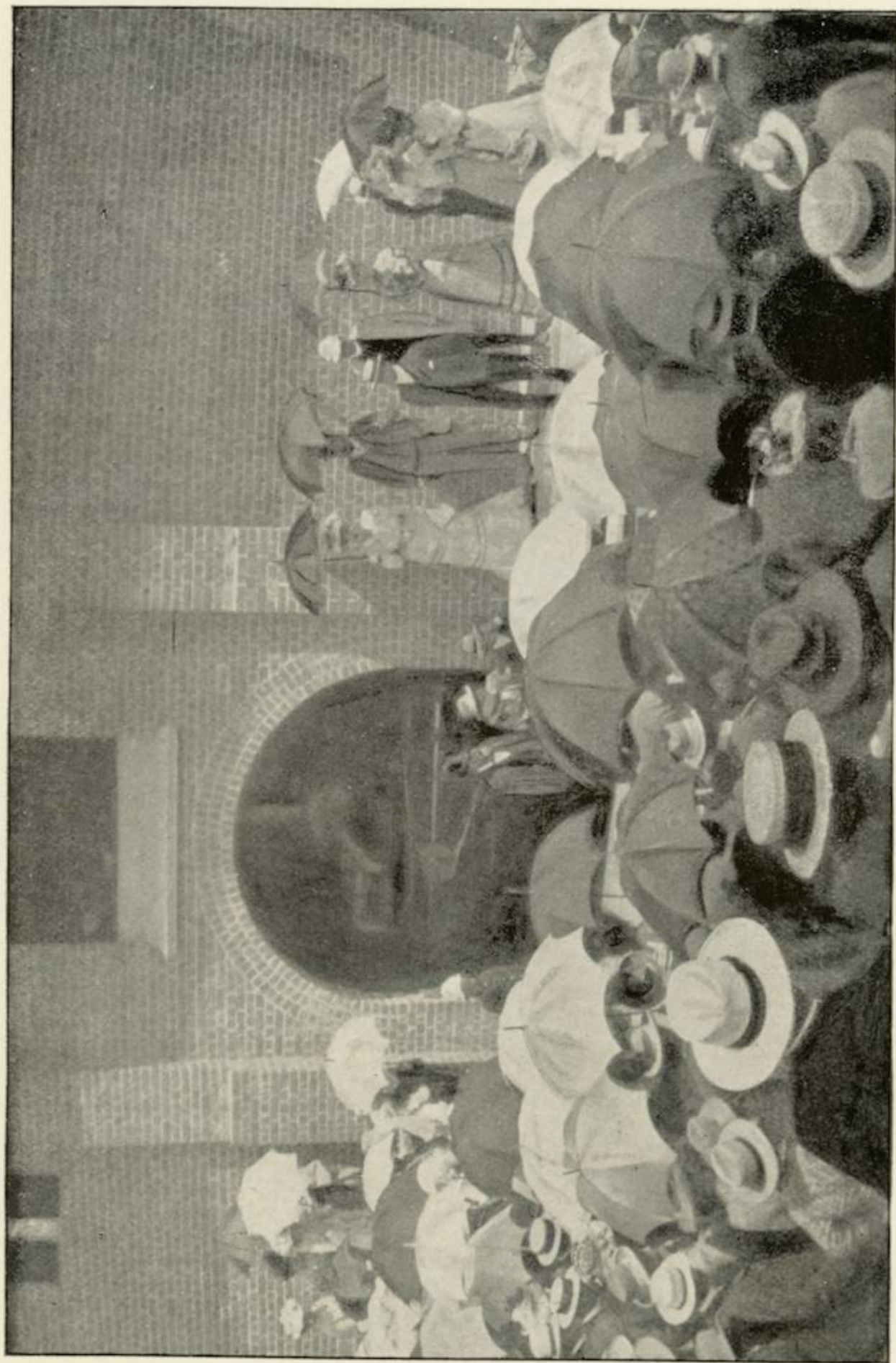
“The completion of this beneficent work
“must have an immense influence in pro-
“moting the advancement of these **Gold-**
“**fields**, and in assisting the settlement of
“the country through which the pipe-line
“passes. It will also enable the Railways
“to be safely and economically worked,
“and will prove an all-important factor
“in furthering the construction of the Rail-
“way from **Kalgoorlie to Port Augusta**,
“and thus consummate for ever the real
“federation of the Eastern and Western
“sides of **Australia**.

“The difficulties of this undertaking
“have been immensely increased by the

8 **Coolgardie Water Supply.**

“districts to be served being **1,300 feet**
“above the source of the water supply,
“which has necessitated the erection of
“**twenty sets of pumps** distributed at
“**eight pumping stations** along the route
“and a consequent large annual expenditure
“for pumping, which would be saved in
“cases where the water could be supplied
“by gravitation.

“In addition to the local utilitarian ad-
“vantages, it will, I firmly believe, have
“a great influence on the public mind
“throughout **Australia** in regard to water
“supplies for the arid interior; for, when
“it is realised that Western Australia, with
“a population of a little over **200,000,**
“has successfully completed a project which
“can daily distribute **6,000,000 gallons**
“**of water** in Kalgoorlie, **352 miles** from
“the source of supply in the Helena
“River, it may reasonably be expected
“that this work will be the forerunner of
“many similar and larger schemes for the
“conservation and distribution of water in
“other arid places throughout **Australia.**



LADY FORREST STARTING THE PUMPING MACHINERY AT MUNDARING,
22nd JANUARY, 1903.

Coolgardie Water Supply. 9

“It is a source of much gratification
“that we have here with us to-day so many
“representative men connected with the
“**Federal Parliament** and with the Parlia-
“ments of the States of Australia. This
“pleasurable fact testifies to the growing
“importance of Western Australia as an
“integral part of the **Australian Com-**
“**monwealth**, and is an assurance of the
“interest taken by the people of Australia
“in our enterprise and advancement.

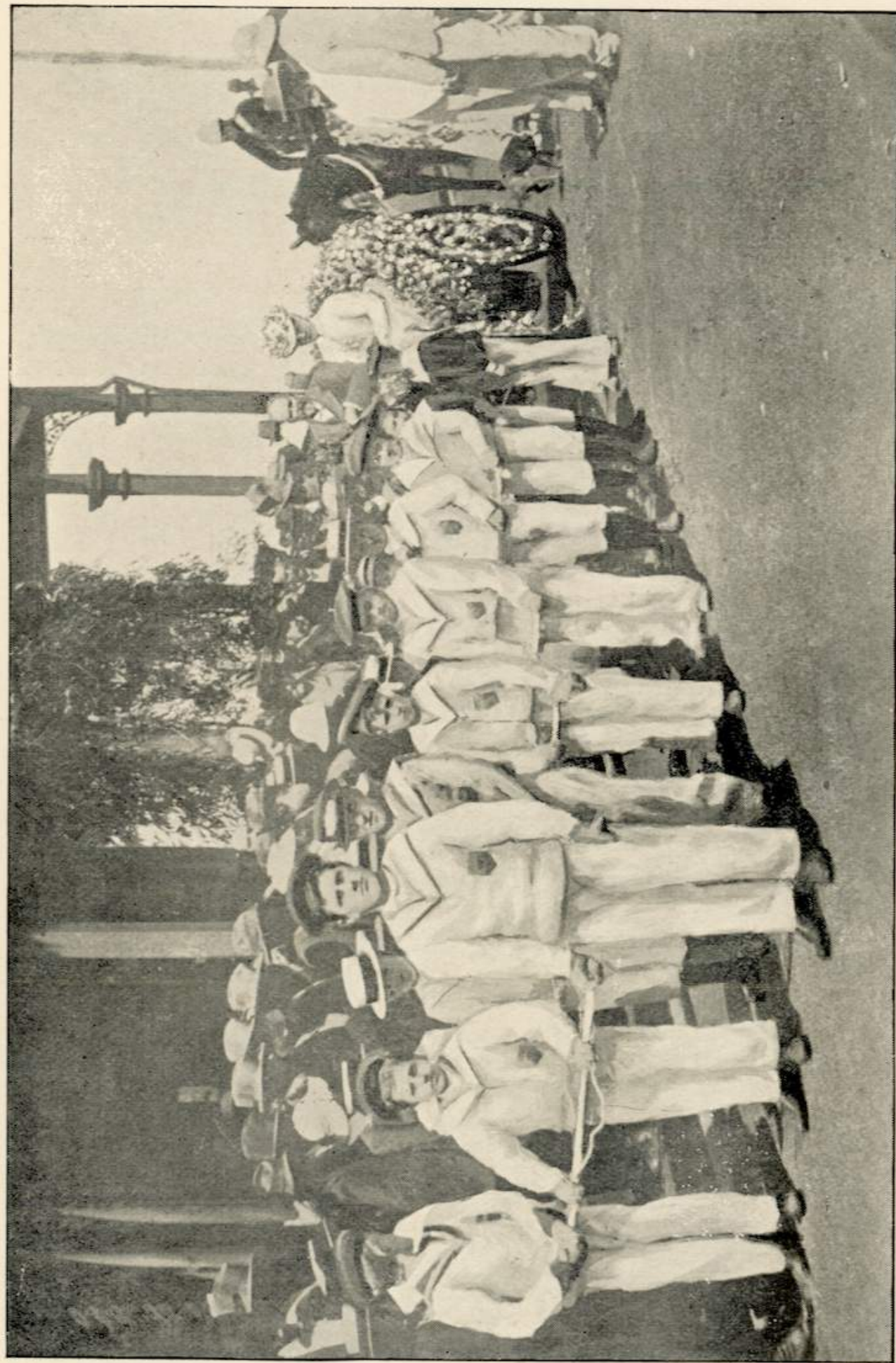
“Our distinguished visitors will learn
“with astonishment that nine years ago
“this place, which is **387 miles** by rail
“from Fremantle, was absolutely unoccu-
“pied and unknown, and was in reality
“an arid wilderness; that within a radius
“of thirty miles from here there is now
“a population of **50,000** people; that this
“area has already produced about **200 tons**
“**of gold**, valued at **£25,000,000** sterling;
“that large cities have been built, with all
“the conveniences, and even luxuries, of
“civilized life; that electric tramways are

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“running in the streets, and a railway
“system has been established which extends
“**150 miles** still farther from here into the
“interior. When all this is realised, and
“also the fact that there is absolutely no
“permanent fresh water within this area,
“the vital importance of this **Great Water**
“**Scheme** (by far the greatest of its kind
“in the world) must be forcibly realised
“and appreciated.

“In the midst of our rejoicing, however,
“my thoughts turn to the memory of the
“great builder of this work, the late **Mr.**
“**C. Y. O'Connor, C.M.G.**, who we all
“regret is not with us to receive the honour
“which is due to him; and our sorrow and
“regret is intensified when we remember
“how arduously and incessantly he laboured
“to complete this work, and how anxiously
“he looked forward to this day.

“The successful opening of this **Great**
“**Water Supply** is a triumph for the Engi-
“neering Department of the Government,
“and our thanks are due to all those



SIR JOHN AND LADY FORREST BEING DRAWN IN TRIUMPH THROUGH COOLGARDIE.

24th JANUARY, 1903.

“officers who so ably contributed to this
“splendid result.

“It is fitting, too, that I should remem-
“ber to-day, with heartfelt gratitude, the
“names of those members of **Parliament**
“and others who never wavered in support
“of this great enterprise, and without
“whose able and continued assistance it
“could not have been undertaken and suc-
“cessfully carried out.

“In concluding my speech when moving
“the second reading of the Bill authorising
“the construction of this work, in the Legis-
“lative Assembly, on the **21st July, 1896,**
“I said:—

‘ **The Scheme** which I have had the plea-
‘sure and honour of placing before the
‘members of this House, and before
‘my fellow - colonists, is a project
‘worthy of an enterprising people. I
‘believe if we carry out this great
‘work, not only will the **Goldfields**
‘flourish, not only shall we be relieved
‘from anxiety in regard to the water
‘question, but we shall also be repaid
‘one hundred-fold. Future genera-

12 Coolgardie Water Supply.

'tions, I am quite certain, will think
'of us and bless us for our far-seeing
'patriotism, and it will be said of us,
'as **Isaiah** said of old, "**They made**
"**a way in the wilderness, and**
"**rivers in the desert.**"'

"These sanguine and confident words I
"reiterate to-day.

"**I pray God** that this river of pure water
"may give health, comfort, and prosperity
"to all those who come within its life-giving
"influence, and that it may prove a **benefit**
"and a **blessing** to the Coolgardie Gold-
"fields, and be far-reaching in its influence
"for good to all **Australia.**

"I now declare this great work open for
"the use of the people."



Water running into the first Reservoir,
en route to Kalgoorlie.



The Late C. Y. O'CONNOR, C.M.G., M.I.C.E.

Engineer-in-Chief of Western Australia,
Who designed and carried out the work. (Died before the work was finished).

Description of the Work.

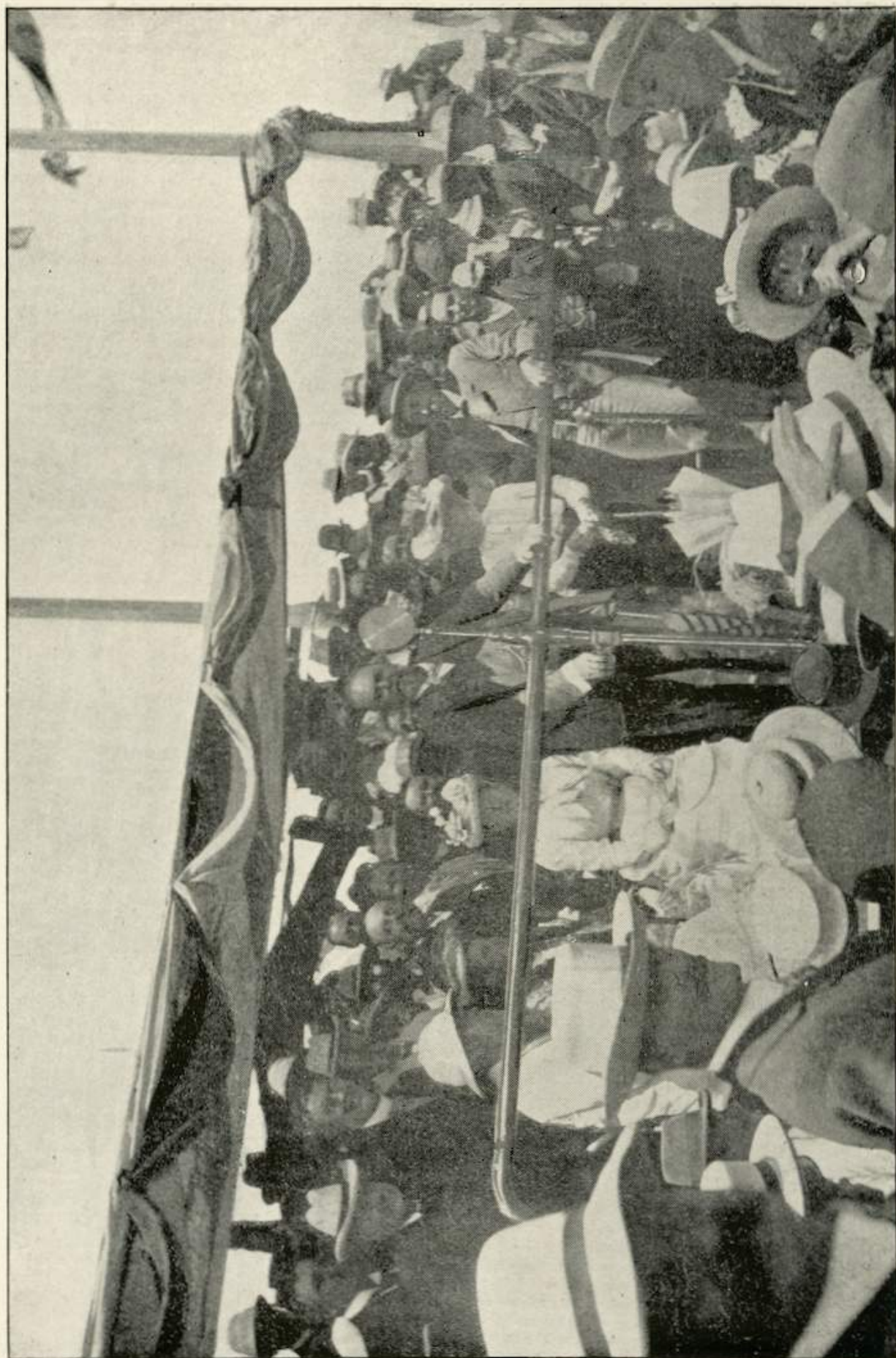
By SIR JOHN FORREST.

THE opening of the Coolgardie Goldfields Water Supply, on the **24th January last**, has drawn particular attention to this great project, and some information in a condensed form may be of interest in regard to it.

At the outset, it may be stated that gold was first found in what is now known as the Coolgardie Goldfields, at Coolgardie, **in August, 1892**, and Kalgoorlie **in June, 1893**, and that the principal mining centres are Kalgoorlie, Coolgardie, Boulder, Kanowna, Broad Arrow, Bulong, Bardoc, Menzies, Niagara, Leonora, Mt. Morgans, Laverton, and dozens of other places of varying size and importance. The whole of the immense area comprised in the **Coolgardie Goldfields** is destitute of any permanent water, and the whole of the

fresh water required for domestic use, and for the boilers of the machinery, has hitherto been obtained either by condensing it from salt water, which is, in some places, fairly plentiful, or by conserving the limited and uncertain rainfall.

The difficulties in regard to water for the increasing population of these **Gold-fields** early forced the subject into prominence, and the fear that the railway system would be almost paralysed from the same cause, made it imperative that the water supply question should receive definite and immediate attention from the Government. The difficulties connected with the want of water became accentuated in **1896**. On the **23rd of March** of that year, on the opening of the railway to Coolgardie, Sir John Forrest, being at that time Prime Minister of Western Australia, publicly announced that his Government was determined that an adequate water supply should be provided, and, on the **23rd of September** following, the Royal Assent was given to an Act authorising the



SIR JOHN FORREST TURNING ON THE WATER AT COOLGARDIE,

24th JANUARY, 1903.

Coolgardie Water Supply. 15

raising of a sum of £2,500,000 by Loan, for the purpose of providing a permanent water supply for the Coolgardie Goldfields.

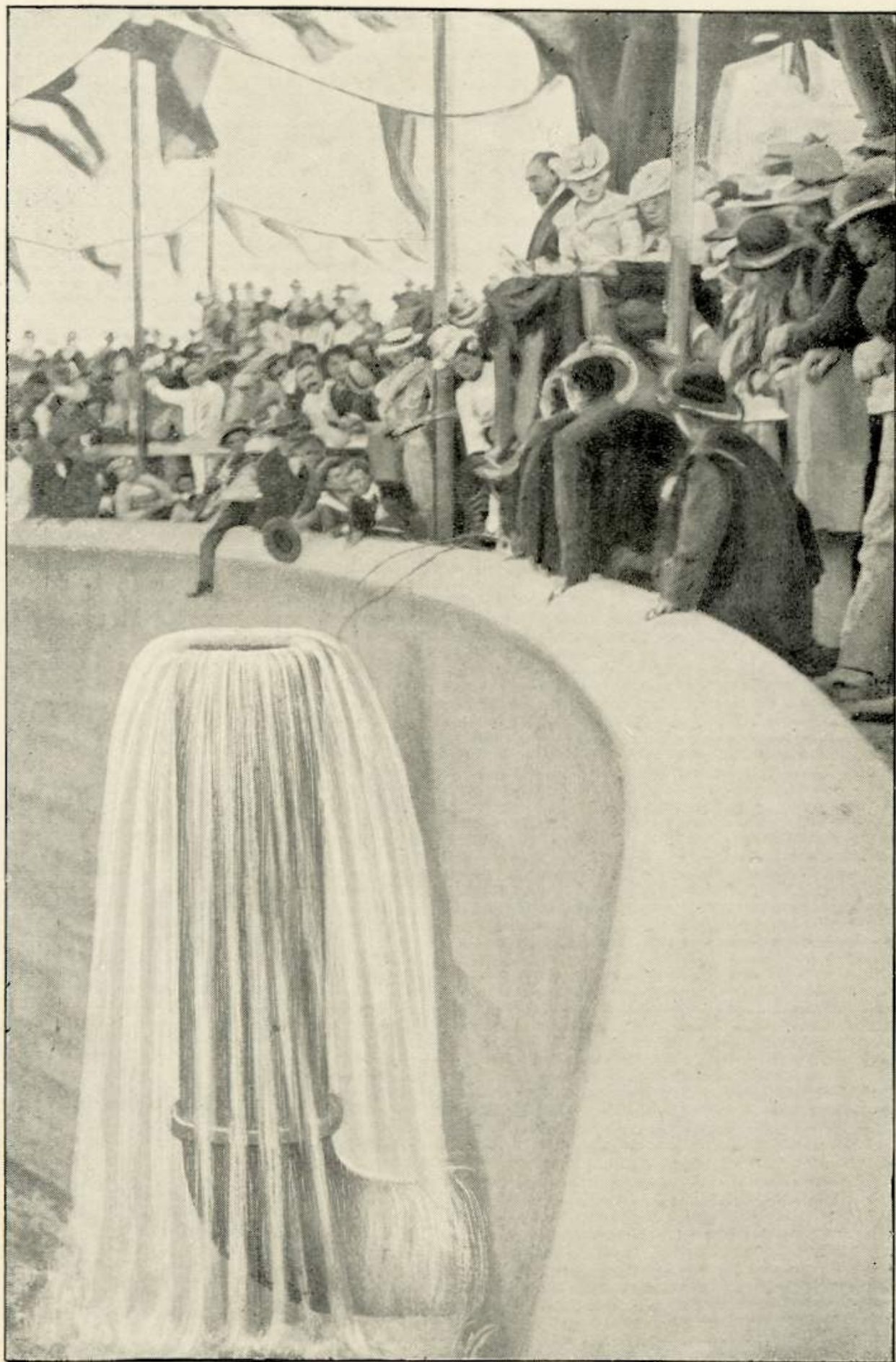
The work then authorised is now successfully completed, and comprises the following:—

1. A solid concrete dam, 755 feet long, across the Helena River, at Mundaring (about 21 miles from Perth), and 100 feet high above the bed of the river has been finished. This dam, which consists of 66,000 cubic yards of cement concrete, has cost about £200,000, and will form a lake seven miles in length, with a surface area, when full, of about 700 acres, and impound about 5,000 millions of gallons of water. The catchment embraces an area of about 350,000 acres.
2. From this lake or reservoir the water is pumped for 309 miles to a place called Bulla-bulling, from which it runs by gravitation to Coolgardie (18 miles), and to Kalgoorlie (43 miles), making a

Coolgardie Water Supply.

total distance from the source of the water supply at Mundaring to Kalgoorlie of **352 miles**.

3. The water is conveyed the whole of this **352 miles** through steel pipes **30 inches** in diameter, and of the minimum thickness of $\frac{1}{4}$ -inch, though in places where necessary it is thicker. There are **66,000** pipes, each **28 feet** long. The steel was imported, and the pipes were made in Western Australia, on the "Mephan Ferguson" patent locking bar joint principle.
4. There are **eight** pumping stations, and **twenty** sets of pumps in all. There are three sets of pumps at four stations, and two sets at the other four stations, one pump being intended to be always in reserve in case of accident. The total height between the Mundaring Reservoir and Bulla-bulling, from which the water gravitates to Kalgoorlie, is **1290 feet** but the gross head, allowing **1208 feet** for friction, that has to be overcome, is **2655 feet**.



SIR JOHN FORREST TURNING ON THE WATER AT KALGOORLIE,
and declaring the Works open—24th January, 1903.

5. The quantity that, under ordinary conditions, can be pumped daily is about **6,000,000 of gallons.**
6. The twenty sets of pumps, representing **6,000 horse power**, were made by Messrs. James Simpson & Co. Limited, of London, and are magnificent examples of the work of this great engineering firm.
7. The route of the pipe line is almost altogether along the railway line, and water is therefore obtainable wherever required for railway purposes, and also for the use of the towns, settlements, farmers, and graziers all along the route, so that a **"river of pure water" (6,000,000 gallons a day)** will, for the future, run for **352 miles** through a country hitherto, for the most part, an arid wilderness.

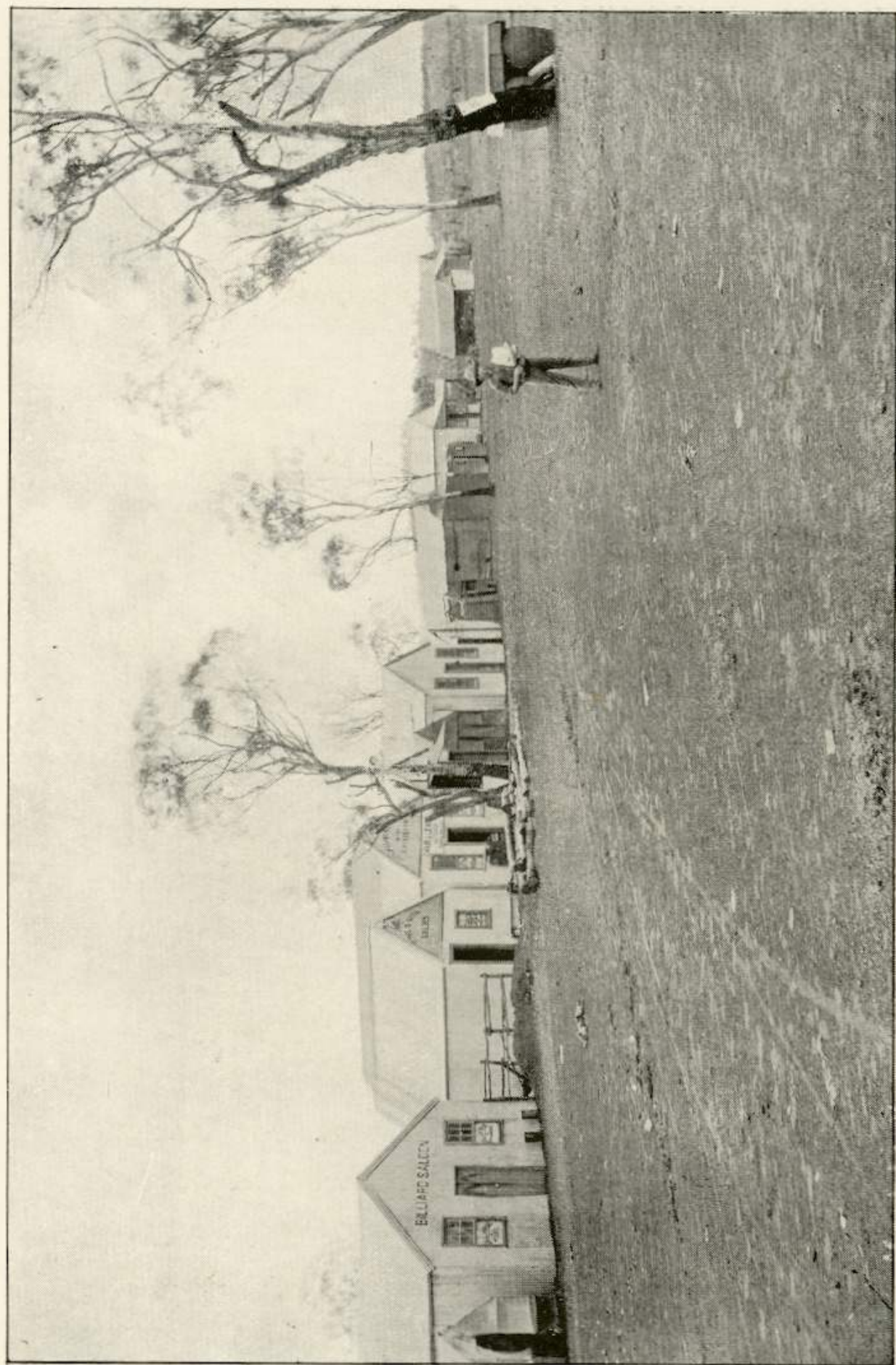
The project is the largest "pipe-line" water supply scheme that has ever been carried out—that is to say, there is no "pipe-line" scheme which approaches its magnitude with regard to the quantity of water pumped, combined with the length

18 **Coolgardie Water Supply.**

of pipe-line, and the height to which the said quantity of water is raised.

If the whole work had been carried out on the original specifications, it would have cost less than the estimate of **£2,500,000**, but, the minimum thickness of the steel for the pipes was increased from **three-sixteenths** to **four-sixteenths** of an inch, and improvements were made in the class of pumps and other matters, and the total cost of the work will, therefore, now exceed the original estimate to a small extent. The cost of reticulation of the towns, mines, and other places was not included in the original estimate.

Under the terms of the Statute authorising the construction of the work, a sinking fund of **3 per cent.** per annum on the original cost is provided, which is estimated to redeem the principal cost in about **twenty years**; and it is estimated that in two years' time the revenue derivable from the sale of water **will be sufficient to cover the whole cost** of interest,



KALGOORLIE, in 1895.

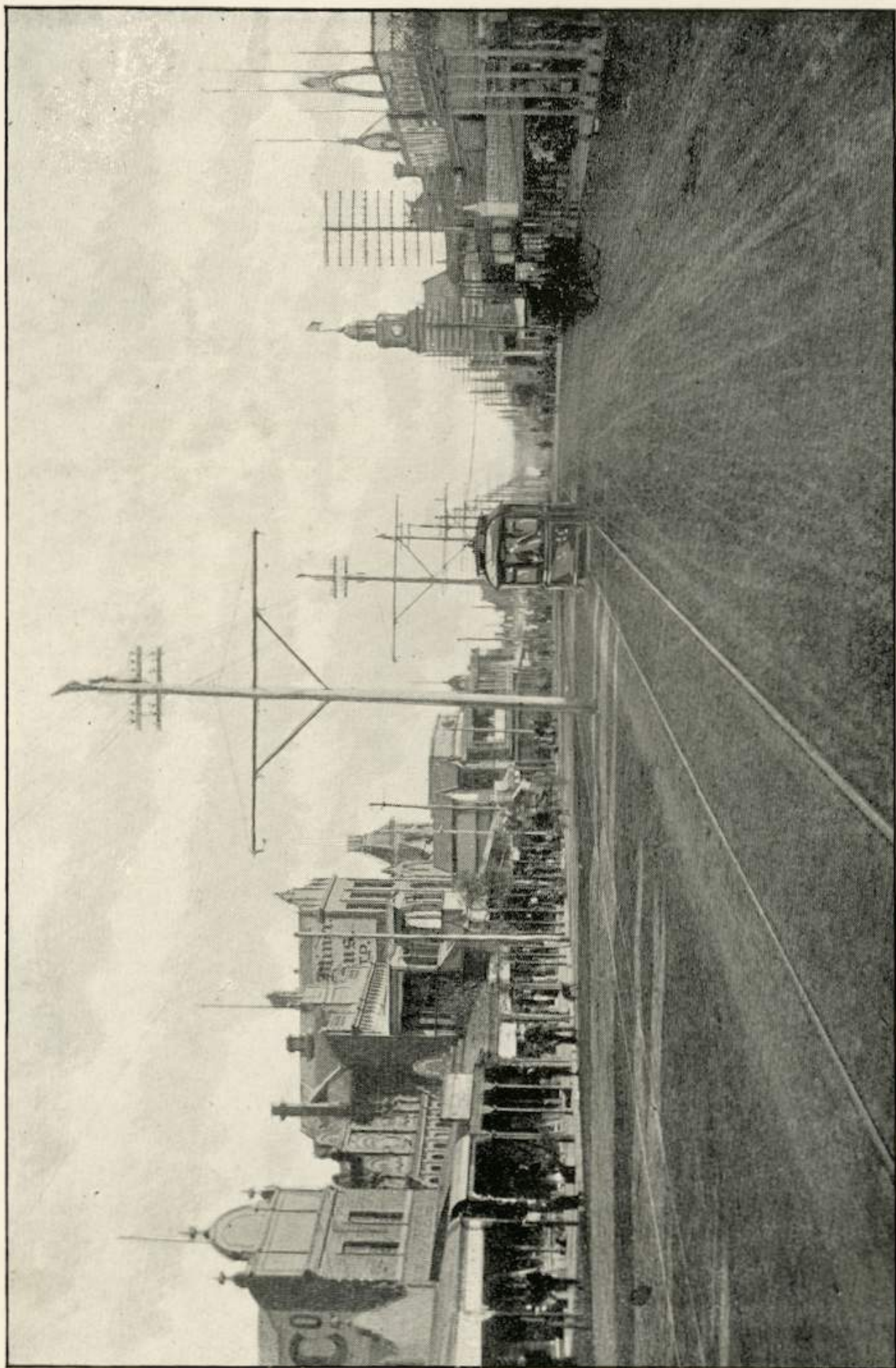
sinking fund, maintenance, and working expenses.

The saving to the **Railway system** by reason of this certain and abundant water supply all along the Railway line will be very great. In the past, the expense of providing the Railway with water has cost an immense sum; and for years past, during every summer, a large number of trains have been daily employed hauling water for the use of the **Railway service**. This expensive and troublesome work will now altogether cease, and with it also much anxiety.

The plentiful supply of good water now assured will also greatly ameliorate the condition of the **toilers and workers**, and the people generally, in the large mining towns and centres at Kalgoorlie, Coolgardie, Boulder, and many other places; and it will also enable the country through which the pipe-line passes to be profitably utilised.

The advantages of a plentiful supply of good water, at a cost ranging from **one-fifteenth** to **one-twenty-fifth** of that

hitherto paid for condensed water, is an immense material **gain** to the community; and when it is remembered that the Coolgardie Goldfields alone have already produced **200 tons of gold, valued at £25,000,000 sterling**, and that the prospects of Western Australia are largely identified with the continued progress of this great mining centre, there is full justification for the most sanguine anticipations as to the immense good that will result to the State from this great **utilitarian and beneficent enterprise.**



KALGOORLIE.—January, 1903.

